

alkalis, sodium nitrite, and potassium ferrocyanide prevent rusting is due, not to their power of decomposing hydrogen peroxide, but of interacting with carbon dioxide. Some substances, such as potassium iodide, which destroy hydrogen peroxide do not inhibit, but actually accelerate, the rusting of iron.

The facts recorded thus afford no basis for the assumption that iron can be caused to rust by pure water and pure oxygen alone, and give a satisfactory explanation of phenomena which were considered as being explicable only in the light of the hydrogen peroxide hypothesis.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The Herbert Spencer lecture will be delivered in the examination schools on Thursday, June 7, at 3 p.m., by the Hon. Auberon E. W. M. Herbert, St. John's College.

Dr. G. C. Bourne, fellow of New College, has been nominated to the office of public examiner in zoology for 1906 in succession to the late Prof. Weldon.

At a meeting of the Junior Scientific Club on May 25 some experiments on "liquid crystals" were shown by Messrs. H. B. Hartley (Balliol) and H. L. Bowman (New College).

The following is the text of the speech delivered by Prof. Love in presenting Captain H. G. Lyons for the degree of D.Sc. *honoris causa* on May 29:—

Magnas profecto gratias hodie debemus Aegypto fluvioque Nilo, quo quotannis campos inundante, orta est ex necessitatibus hominum agellos suos summa cura dimittentium, Geometria, subtilissimae cuiusque scientiae parens. Debitum pro portione solvit Magna Britannia, cum moribus institutisque Europaeis in Aegyptum inducendis, tum viris ingenio et scientia pollentibus eo missis, qui ipsis rei publicae rectoribus quasi moderatores et gubernatores sint. In hoc numero locum insignem obtinet Henricus Georgius Lyons, qui cum decem abhinc annos omnia quae ad agrorum dimetiendorum, ad astrorum observandorum rationem pertinent, intermissa invenisset, non solum operam instauravit, sed etiam ipse nova quaedam commentus est, cum de harenae solique aevo et materia, de varia camporum planitie, de imbrium diversitatibus diligentissime quaereret: quod genus cognitionis quam late pateat nemo non videt. Agrorum quidem irrigandorum causa hoc opus noster suscepit, neque praeclarissimos fructus in hac re non assecutus est: nunc agit ut, custodibus et speculatoribus in ripis Nili tanquam in statione dispositis, his nuntiis fretus fluminis incrementum quantum anno proximo futurum sit ante praedicat: qua de re voce non incerta iam loquitur augur optimus. Neque tamen huic viro satis est scientiae et rei publicae inservire: quin vetustissimis illis monumentis quibus abundat Aegyptus magno opere delectatur. Veluti cum Nili regendi causa maximus ille prope Philas agger aedificaretur verebantur homines ne amplificata fluminis vis templis nobilissimis damnum adferret, huius viri laus est fanorum fundamentis confirmatis stabilitisque ita civum commodis consuluisse ut antiquitati venerandae parceretur.

CAMBRIDGE.—The voting on the proposals of the studies and examinations syndicate, which took place last Friday and Saturday, is likely to be misunderstood. The proposals put forward were those suggested by the Bishops of Bristol and Ely and by Mr. S. H. Butcher when the previous recommendations of the syndicate had been rejected. The committee presided over by Dr. Henry Jackson, which exists for the support of the movement in favour of the abolition of compulsory Greek, took no part in the recent agitation; indeed, many of its members voted against the proposals of the syndicate. The committee made no effort to bring up its supporters from the country, and regarded, in fact, the proposals of the syndicate as hardly worth accepting. The studies and examinations syndicate will probably now cease to exist. It has sat for three years and has produced two reports, both of which have been rejected in the main by the clerical vote. It is a well-known fact that in the first contest over compulsory Greek there was a majority of residents in the University

and a majority of laymen in favour of its abolition. It now seems as if nothing but a Royal Commission can remove what to many is an absolute bar to their entrance to the University.

The Hopkins prize of the Cambridge Philosophical Society for the period 1897–1900 has been adjudged to Mr. S. S. Hough, F.R.S., of St. John's College, for his papers on the dynamical theory of the tides, published in the Philosophical Transactions of the Royal Society.

The professor of chemistry gives notice that the chemical laboratory of the University will be open for the use of students in the Long Vacation during July and August. Dr. Fenton will give a course of fifteen lectures on general chemistry on Tuesdays, Thursdays, and Saturdays, beginning on July 5. Mr. J. E. Purvis will give a course of lectures and practical demonstrations in pharmaceutical chemistry for the first part of the third examination for the degree of M.B. on Mondays, Wednesdays, and Fridays, beginning on July 4; and also a revision practical course in the chemistry and physics of hygiene.

The Board of Agricultural Studies announces that an examination will be held for one "Surveyors' Institution scholarship" on July 24–27. The scholarship is tenable for three years, and is of the value of 80*l.* per annum.

PROF. F. FRANZ MARTENS, privat docent for physics in the University of Berlin, who, on Prof. Matthiessens's resignation of the physics chair of the University of Rostock was temporarily appointed as his substitute, has been appointed professor of physics in the Berlin Handelshochschule.

At the May meeting of the Columbia University trustees, Mr. J. K. Rees, Rutherford professor of astronomy and head of the astronomical department, was made a professor emeritus. Mr. Harold Jacoby succeeds Prof. Rees; Dr. C. Lane Poor will be associated with him as a professor in the department, and Dr. S. A. Mitchell has been promoted to an instructorship in astronomy.

It is reported, says *Science*, that the University of California will lose 12,000*l.* yearly by the destruction of buildings owned by it in San Francisco, and that it will lose a further sum of 10,000*l.* yearly by the reduction in value of assessable property in the State. Our contemporary hopes, however, that the loss of income on the San Francisco property is only temporary, and that the State will not permit the University to suffer from the decrease in the taxes.

THE Society for the Advancement of Mathematical Scientific Instruction will hold an annual general meeting in Erlangen during next week. Among the papers of general interest will be:—the investigations of glaciers, by Prof. Hess, of Ausbach; the experiment in ancient times and in the Middle Ages, by Prof. Wiedemann, of Erlangen; the proposals of the education commission of the Naturforschergesellschaft (p. 92), by Prof. Pietzker, of Nordheim; and the conception of number and quantity in teaching, by Prof. Wieleitner, of Speyer. Excursions will be made to Nürnberg and the French Switzerland.

AN agreement for the mutual recognition of certificates has been arrived at between the Universities of Manchester, Liverpool, Leeds, and Sheffield Joint Matriculation Board and the Universities of Oxford and Cambridge. This Joint Matriculation Board will grant exemption from its matriculation examination to persons who have passed Responsions at Oxford with one additional subject, or have passed parts i. and ii. of the Previous Examination at Cambridge with one of the additional subjects. Under certain conditions as to the subjects taken, exemption will also be granted to holders of higher certificates of the Oxford and Cambridge Senior Local examinations. It will be remembered that a similar arrangement between the Universities of Oxford, Cambridge, and London has been announced already. Holders of Oxford and Cambridge Local certificates or higher certificates of the Oxford and Cambridge Joint Board are, if they have taken certain subjects, given exemption from the London Matriculation. Similarly, the Matriculation examination, in certain circumstances, gives exemption from Oxford Responsions and the Cambridge Previous examination.

AN important advance in the development of the forestry branch of Armstrong College has been made by an agreement effected between H.M. Office of Woods and the college authorities, by which the latter take over the local management of Chopwell Woods, in the county of Durham. These woods are within a few miles of the college, extend over an area of nearly 900 acres, and carry crops of larch, spruce, Scotch pine, oak, ash, and other trees, most of which were planted about fifty years ago. The woods will be gradually brought under a proper rotation of cropping by the clearing and replanting of the more mature portions from time to time, and the carrying out of this work will afford favourable opportunities for demonstrating the various operations relating to practical forestry. H.M. Commissioner of Woods, Mr. J. F. F. Horner, has obtained the consent of the Treasury to a house being provided in the woods as a residence for the college lecturer in forestry, Mr. A. C. Forbes, and to continue to pay as heretofore the ordinary working expenses of the woods. The arrangement will facilitate the holding of short courses for practical foresters and others desirous of acquiring a knowledge of the subject, while as a practical demonstration area for the students attending the college forestry class the woods will be *invaluable, and should render Newcastle one of the most favourable centres for forestry instruction in the United Kingdom.*

IN a paper on social conditions in Australia, read at a meeting of the Society of Arts on May 1, the Hon. J. G. Jenkins, Agent-General for South Australia, dealt with the educational advantages of the country. "Generally speaking," he said, "the system of public education is free, compulsory, and secular, the whole expense being met out of the general revenue. The greatest care is taken to provide schools in every part of the country as well as in the thickly populated cities, and in some of the thinly settled districts schools of from ten to fifteen children are established. Fortunately, Australia's educational advancement has not been delayed by sectarian interference. There it is generally considered that a country's advancement rests on the education of its people, and that as national education is a national gain, the nation's treasury should meet the bill. Efforts have been made from time to time by zealous propounders of sectarian beliefs to incorporate religious instruction with the Education Acts of the different States, but the majority of the people are strongly opposed to any form of State aid to religion. They feel that in the bitter strife for sectarian supremacy the efficiency of the schools would become impaired and the practical education of the children neglected. The parents generally take advantage of the public schools for their children, but for those who object, either from class prejudice or religious scruples, good private schools are available."

PROF. J. F. SELLERS, of Mercer University, recently sent out a number of inquiries to forty-four teachers of chemistry in the southern States of the American union; the answers made by forty of the teachers form a symposium on chemical requirements which was presented to a meeting of the American Chemical Society. The paper is printed in *Science* of May 11. In reply to a question asking if chemistry should be taught in preparatory schools, a majority of five thought it should. Answers to a second question showed that in a small majority of colleges only does chemistry follow a course of physics. Prof. Sellers found that about equal time is given to lectures and to laboratory work, and most teachers consider that individual laboratory work should always form part of a chemistry course. Similarly, there is a consensus of opinion that qualitative analysis should follow general chemistry. The majority of the institutions represented offer graduate work in chemistry. The paper shows that few southern chemistry teachers carry on research themselves, and this is because they are overloaded with instruction or executive duties, and are not supplied with adequate library or laboratory facilities for advanced students. The majority of southern colleges give technical courses, and these are controlled by local demands and natural supplies. The sting of the paper, so far as our universities are concerned, lies in the tail, which is as

follows:—"Once the American universities were replicas of the British system, but now the German university sets the standard. It is this shifting of method and manner that affords us of to-day, in the matter of the practical virtue of our courses in science, an assured guarantee of commercial and industrial progress."

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 1.—"The Specificity of the Opsonic Substances in the Blood Serum." By Dr. William Bulloch and G. T. Western. Communicated by Leonard Hill, F.R.S.

Conclusions.—(1) When staphylococci are brought into contact with normal human serum, and are subsequently removed by centrifugalisation, the serum loses its opsonic power for *Staphylococcus*, although the opsonic power of *Bacterium pyocyaneum* is preserved.

(2) Contact of normal human serum with tubercle bacilli leaves the opsonic power of that serum for staphylococcus almost intact, while the opsonic power for tubercle bacillus is completely removed.

(3) Contact of normal human serum with staphylococcus leaves the opsonic power of that serum for tubercle bacillus almost intact, while the opsonic power for staphylococcus is completely removed.

(4) Inoculation of a human being with tuberculin causes quantitative increase in the tuberculo-opsonin, whereas the quantity of staphylococcus opsonin is unaltered.

(5) Inoculation of a human being with staphylococcus vaccine causes a quantitative increase in the staphylococcus opsonin, whereas the quantity of tuberculo-opsonin is unaltered.

March 8.—"On the Relationship between Hæmolysis and the Phagocytosis of Red Blood Cells." By Dr. R. D. Keith.

The conclusion come to is that the phagocytosis of red blood cells does not depend on the presence of the hæmolytic amboceptor, since:—

(1) The substance which induces phagocytosis is partially destroyed by heat, while the hæmolytic amboceptor is entirely thermostable.

(2) The hæmolytic amboceptor may be present in considerable amount in a hæmolytic serum without inducing phagocytosis, notwithstanding prolonged contact of the amboceptor with the red blood cells.

Dean has suggested that phagocytosis may be caused by a complement acting through an amboceptor, and that the partial destruction, of the property in the serum inducing phagocytosis, by heat may be due to the destruction of the complement, while the amboceptor, even in the absence of the complement, may still be capable of inducing phagocytosis. This theory, while it is difficult to disprove directly owing to the complement being destroyed at the same temperature as the thermolabile part of the substance inducing phagocytosis, seems to be an improbable one for the following reasons:—

(1) That it is not an action analogous to that of other amboceptors, e.g. that concerned in hæmolysis. If one destroy the complement of a hæmolytic serum by heat, no hæmolysis takes place, notwithstanding the presence of the amboceptor in large amount.

(2) The hæmolytic amboceptor may be present in large amount in a diluted serum, without that serum having the power of inducing phagocytosis even when Dean's method of testing is employed.

(3) In the dilution experiments recorded in the paper it is shown that one may dilute the complement to such an extent as to abolish hæmolysis, and yet such a serum has a greater "opsonic" power in these dilutions than has the same serum when heated and employed in corresponding dilutions.

"Upon the Properties of an Antityphoid Serum obtained from the Goat." By Dr. Allan Macfadyen. Communicated by Dr. C. J. Martin, F.R.S.

Conclusions.—(1) The intravenous injection of the goat with the toxic cell juices of the *B. typhosus* (obtained under